

Seat  
No.

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मध - 052

**ELECTIVE - II**  
**Digital Image Processing**  
**(New) (1312)**

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Figures to right indicate full marks.
5. Draw neat label diag. Wherever necessary.
6. Each question carries equal marks & all questions are compulsory.

**UNIT - I**

1. Solve any two.

- a) What are different operations used in DIP ? Describe each with example. 10
- b) Explain with example. 10
  - i) Neighbors of pixel
  - ii) Connectivity.
- c) Explain following terms in brief. 10
  - i) DCT
  - ii) Walsh Transform
  - iii) Hadamard transform
  - iv) Wavelet Transform.

**UNIT - II**

2. Solve any two.

- a) Develop a procedure for computing the median of an nxn neighborhood propose a technique for updating the median as the centre of neighborhood is moved from pixel to pixel. 10
- b) How first & second order derivative enhance the image ? Explain which is more enhance ? 10

- c) Explain why the discrete histogram equalization technique will not in general yield flat histogram. 10

### UNIT - III

3. Solve any two.

- a) What are different coding technique used in DIP ? Explain any one. 10
- b) Discuss digital image compression with three basic data redundancies. 10
- c) Use hamming (7, 4) code to code the IGS quantized data given in a table below : 10

Pixel	Grey Level	Sum	IGS Code
i - 1	NA	0000 0000	NA
i	0110 1100	0110 1100	0110
i+1	1000 1011	1001 0111	1001
i+2	1000 0111	1000 1110	1000
i+3	1111 0100	1111 0100	1111

### UNIT - IV

4. Solve any two.

- a) What are different mean filters used for restoration ? Explain any one. 10
- b) Explain the colour conversion with an appropriate method in detail. 10
- c) Explain in detail spatial transformation in DIP. 10

### UNIT - V

5. Solve any two.

- a) Discuss different three detection of discontinuities using 3X3 mask. 10
- b) Explain various boundary descriptors. 10
- c) What do you understand by thresholding the image ? Explain in brief. 10

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